

DETAILED ACTION

Response to Arguments

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

In view of Applicant amendments the previous objections have been withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-6, 8-9, 11, 13, 15-20, 22, 24, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin (US 5,078,476) and Beard (US 5,747,938) in view of Wada (U.S. Pat. No. 6,494,585).

Shin discloses a backlight controller for a liquid crystal display [Figure 2]. A use detection means (pulse generating member 1) puts out a use detection signal (pulse signal) when a display means is placed in a use state (there is a video signal 7). An optical limitation means (the backlight power controller) limits light emitted out of a lighting means (backlight 2) incident upon a screen of the display means (the liquid

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crystal display) according to the use detection signal. [column 1, lines 37-53; column 3, lines 5-18; column 4, lines 15-33 and 57-63].

However, Shin discloses that the optical limitation means limits light emitted out of the lighting means only when the use detection signal indicates that the display is not in use. Beard discloses an automatic controller for the backlight of a liquid crystal display [Figure 1; column 2, lines 30-32]. The control circuitry limits the light emitted out of a lighting means (electroluminescent panel 10) incident upon a screen of the display means (the liquid crystal display) while the display means is in use (the light output of the electroluminescent panel is adjusted based upon ambient light levels) [column 2, line 59 to column 3, line 15].

A combination of Shin and Beard would provide a controller for the backlight of a liquid crystal display that limits the output of the backlight according to ambient light levels, when a video signal is detected. It would have been obvious to one of ordinary skill in the art at the time of the invention to make such a combination in order to limit power consumption by turning off the lighting means when the display means is not in use (Shin; column 1, lines 28-34) and limiting the lighting means's output according to the intensity of the ambient light (Beard; column 3, lines 16-28).

The combination of Shin and Beard above teaches a backlight controller, but there is no suggestion to use a light external to the display, nor in a vehicle. Wada teaches a frontlit LCD configuration. Wada shows in figure 13, item 10 a front light and item 30 a LCD which are clearly depicted as separate components external to each other. It would have been obvious to one of ordinary skill in the art at the time of the

invention to use such a configuration of a lighting source and display in order to improve the performance and visibility while minimizing the power consumption (col. 1 lines 20-45 and col. 2 lines 38-45).

With regard to claims 3 and 15, Shin discusses as prior art backlight apparatuses that turn on with no regard to the existence of a video signal. As such, when an LCD TV is turned on, the pulse generating member will turn on the backlight.

With regard to claims 4 and 16, the use detection signal (pulse signal) of Shin is indicative of a video signal [column 1, lines 37-53].

With regard to claims 5, 6, 17, and 18 in the combination of Shin and Beard, the optical limitation means taught by Beard (responsive to ambient light levels) will only be active while the use detection signal of Shin indicates that a video signal is present.

With regard to claims 8 and 19, the invention of Beard may be implemented in a portable (i.e., movable) piece of equipment [column 1, lines 20-38]. The teachings of Shin would further enhance battery life for a portable electronic device with a backlit liquid crystal display.

With regard to claim 11 and 22, a switching device in Shin, transistor TR24, is responsive to the presence of a video signal input [column 3, lines 5-15; column 4, lines 52-56].

With respect to claims 26-27 Shin and Beard teach the use of a display which comprises a second lighting means (backlight) however does not teach the use of a first lighting means. Wada teaches the lighting means external to said display comprises a first lighting means (item 11).

Claims 2 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Shin, Beard, and Wada in view of Kurzman (US 5,057,977).

The combination of Shin, Beard, and Wada above teaches a frontal light controller, but there is no suggestion that the backlight may turn on when the "display means is pulled out from an accommodating means". Kurzman teaches a pull-out lighted display such that a light source associated with a display illuminates when the display is pulled out of a housing. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Shin, Beard, Wada, and Kurzman to further power consumption by preventing backlighting means if either a display has no video input or is not placed in a viewable position, while limiting the intensity of the backlight based upon ambient light conditions.

Claims 10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin, Beard, and Wada in view of Weindorf (US 6,396,217).

The combination of Shin, Beard, and Wada above teaches the lighting means, however does cite the location the lighting means is disposed. Weindorf teaches an assembly which may be used to illuminate the control panel in the interior of a vehicle. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Shen in order to allow the vehicle user to see the information displayed on the screen efficiently.

Claims 12 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin, Beard, and Wada in view of Hyman (US 5,637,093).

The combination of Shin, Beard, and Wada above teaches a frontal light controller, but there is no suggestion to turn on the light when the display is not in use. Hyman discloses a selective controller for a backlight. A feature of Hyman is a means for generating an alarm in response to an alarm condition; if an alarm message is generated, a backlight will be activated [column 1, lines 26-42; column 12, lines 23-30]. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate this aspect of Hyman in the combination of Shin, Beard, and Wada to allow the backlight controller to inform the user of an alarm condition even if the liquid crystal display is not currently in use.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Rutland-Wallis whose telephone number is 571-272-5921. The examiner can normally be reached on Monday-Thursday 7:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 571-272-2084. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Michael J Sherry/
Supervisory Patent Examiner, Art Unit 2836

MRW